No. 8100164

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Purdue University Agricultural Experiment Station and ARS-USDA

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW,* [THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM,] TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

*[Waived]

COMMON WHEAT

'Auburn'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington *this* 27th *day of* May *in the year of our Lord one thousand nine hundred and* eighty-two.

Attest:

Kenneth A. E...

Acting
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R Block

Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

FORM APPROVED
OMB NO. 40-R3822

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY
Purdue 6919509-4-1-1 & 12/14/81

1b. VARIETY NAME
Auburn

FOR OFFICIAL USE ONLY
PV NUMBER 8100164

2. KIND NAME
Wheat

3. GENUS AND SPECIES NAME
Triticum aestivum

FILING DATE 9/8/81
TIME 12:00 A.M. P.M.

4. FAMILY NAME (BOTANICAL)
Gramineae

5. DATE OF DETERMINATION
January 1, 1981

FEE RECEIVED $ 500.00 $ 250.00
DATE 9/8/81 1/22/82

6. NAME OF APPLICANT(S)
Director, Purdue Univ. Agric. Experiment Station and ARS-USDA

7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
Purdue University
West Lafayette, IN 47907

8. TELEPHONE AREA CODE AND NUMBER
317-494-8360

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*
Agricultural Experiment Station

10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION
Established by Federal Law (Hatch Act)

11. DATE OF INCORPORATION
1889

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:
Dr. B. R. Baumgardt, Director
Purdue University Agricultural Experiment Station
West Lafayette, IN 47907

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [x] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [x] 13B. Exhibit B, Novelty Statement.
- [x] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [x] 13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [x] YES [ ] NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? [x] YES [ ] NO

14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? [x] FOUNDATION [x] REGISTERED [x] CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [ ] YES [x] NO *(If "Yes," give name of countries and dates.)*

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [x] NO *(If "Yes," give name of countries and dates.)*

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [ ] YES [ ] NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

Aug. 13, 1981 (DATE)

B R Baumgardt (SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)

FORM GR-470 (1-78)

13A. Exhibit A, Origin and Breeding History of Auburn.

Auburn (CI 17898) was developed by the Purdue University Agricultural Experiment Station in cooperation with AR, SEA, U.S. Department of Agriculture. Auburn resulted from a four-way cross to combine resistance to diseases with good plant type and excellent winterhardiness. The detailed parentage and method of combination are: Siete Cerros/Arthur/2/Oasis type/6/ Afghanistan sel./Knox 62 type/4/Knox*2/2/Frontana/Exchange/3/Riley type/5/Arthur*5/2/Arthur sib/Agatha/3/Oasis type.

The new variety was developed by the pedigree method breeding with plant selection in the F_1, F_2, F_3, and F_4 generations and with line selection in the F_9 generation. In the F_9 generation 52 of 100 plant progeny rows that were homozygous for moderate resistance to Septoria leaf blotch and resistant to leaf rust in the adult plant stage in the field in 1978 were bulked to form breeders' seed. Breeders' seed in 1980 was in the F_{11} generation of selfing.

Auburn was tested in disease nurseries from 1970 to 1980, in nursery yield trials from 1975 to 1980, in over-state drill plot trials from 1978 to 1980, and in the Uniform Eastern Soft Red Winter Wheat Nursery in 1980.

Soft wheat quality was evaluated from nursery samples in 1976, 1977, and 1979; and from drill plot samples in 1978 and 1979.

Auburn has been uniform and true breeding during our observations in developing breeders' seed.

No variants have been observed.

13B. Exhibit B, Novelty Statement.

Auburn has a unique combination of excellent winterhardiness, short culms, moderately early maturity, and resistance to powdery mildew, leaf rust, and Septoria leaf blotch diseases.

Auburn is about 5 cm shorter and 3 days later in maturity than Arthur. It has exceptional winterhardiness among commercial varieties (Table 8). It has resistance in the adult plant stage to the races of fungi, Puccinia recondita and Erysiphe graminis, currently prevalent in Indiana (Tables 5 and 6). Auburn has resistance to Septoria leaf blotch of a different genetic source than that of Oasis, Beau, and Sullivan (Table 4).

Auburn has a very slight expression of snakiness of peduncle.

Exhibit B

Auburn is most like Arthur in appearance but Auburn is resistant to Septoria leaf blotch, powdery mildew, and leaf rust in Indiana whereas Arthur is susceptible.

Auburn has the H_6 gene for resistance to the Hessian fly whereas Arthur and Doublecrop have the H_3 gene and Oasis, Arthur 71, Beau, Sullivan, and Downy have the H_5 gene.

Auburn, with the H_6 gene for resistance to Hessian fly, is different from each of its parents listed in Exhibit A except for Knox 62. Auburn is about 3 days later in maturity than Knox 62.

FORM APPROVED: OMB NO. 40-R3822

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
Purdue University Agricultural Experiment Station

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
Purdue University
West Lafayette, IN 47907

FOR OFFICIAL USE ONLY
PVPO NUMBER 8100164
VARIETY NAME OR TEMPORARY DESIGNATION
Auburn

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[2] 1 = SPRING 2 = WINTER 3 = OTHER *(Specify)* _____ [1] 1 = SOFT 2 = HARD 3 = OTHER *(Specify)* _____

[2] 1 = WHITE 2 = RED 3 = OTHER *(Specify)* _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[2][3][1] FIRST FLOWERING [2][3][8] LAST FLOWERING

4. MATURITY *(50% Flowering)*:

[ ][ ] NO. OF DAYS *EARLIER* THAN ..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[0][3] NO. OF DAYS *LATER* THAN ..... [1] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT *(From soil level to top of head)*:

[0][9][1] CM. HIGH

[ ][ ] CM. TALLER THAN ..... [ ]

[0][5] CM. SHORTER THAN ..... [1] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING *(See reverse)*:

[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[2] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][4] NO. OF NODES *(Originating from node above ground)*

[1][8] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[2] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[1] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER *(Specify)*: _____

[1] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][1] MM. LEAF WIDTH *(First leaf below flag leaf)*

[1][6] CM. LEAF LENGTH *(First leaf below flag leaf)*:

FORM LPGS-470-6 (3-79) (Formerly Form GR-470-6 (2-73), which may be used)

8100164

11. HEAD:

[1] Density: 1 = LAX 2 = DENSE

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER *(Specify)* _____

[3] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER *(Specify)*: _____

[0][9] CM. LENGTH [1][3] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT *(CA. 7 mm.)* 2 = MEDIUM *(CA. 8 mm.)* 3 = LONG *(CA. 9 mm.)*

[2] Width: 1 = NARROW *(CA. 3 mm.)* 2 = MEDIUM *(CA. 3.5 mm.)* 3 = WIDE *(CA. 4 mm.)*

1 1 = Glabrous 2 = Pubescent

[3] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[1] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[ ] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[2] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG D 12/14/81

[2] Brush: 1 = NOT COLLARED 2 = COLLARED collar is non-prominent D 12/14/81

[4] Phenol reaction *(See instructions)*: 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER *(Specify)* _____

[0][6] MM. LENGTH [0][3] MM. WIDTH [2][9] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI' D 12/14/81

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] STEM RUST *(Races)* See tables

[2] LEAF RUST *(Races)* See tables

[0] STRIPE RUST *(Races)* _____

[0] LOOSE SMUT

[2] POWDERY MILDEW See tables

[0] BUNT

[2] OTHER *(Specify)* Septoria leaf blotch

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY

[1] APHID *(Bydv.)*

[0] GREEN BUG

[1] CEREAL LEAF BEETLE

[ ] OTHER *(Specify)* _____

HESSIAN FLY RACES: [0] GP [2] A [2] B [1] C [1] D [0] E [0] F [0] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Arthur	Seed size	Monon
Leaf size	Beau	Seed shape	Arthur
Leaf color	Abe	Coleoptile elongation	Arthur
Leaf carriage	Abe	Seedling pigmentation	Arthur

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

13D. Exhibit D. Description of Additional Characteristics.

Auburn has been exceptional in winterhardiness in Indiana compared with other soft red winter wheats (Table 12).

Auburn has excellent milling quality, good cookie-baking quality, and acceptable cake-baking quality (Table 6).

Auburn has good productivity and excellent agronomic type (Tables 1 to 5). The new variety gives excellent protection currently to natural epidemics of the leaf rust, powdery mildew, and Septoria leaf blotch diseases (Tables 8, 9, and 10). Its resistance to leaf rust derives from several sources, including Exchange and Frontana, and is genetically complex (See Schafer et al. 1963. Phytopathology 53:569-573).

Auburn is intolerant to aluminum in acid soils (Table 12), and is moderately susceptible to the barley yellow dwarf disease (Table 7).

Table 1. Comparative performance of Auburn in nursery plots at Lafayette, Indiana, 1975 - 80.

	Yield	Test Wt.	Kernel Wt.	Headed May	Height	Pre-ripe straw score**	Post-ripe straw score**
	(4)*	(4)	(4)	(5)	(5)	(4)	1979
	(bu/A)	(lbs/bu)	(g/1000)		(in)	(0-9)	(0-9)
Auburn	77.7	60.1	30.1	23.6	34.4	3.5	7
Arthur	73.8	60.3	35.6	20.6	35.6	5.3	5
Monon	65.8	59.5	31.8	19.8	38.4	5.3	7
Oasis	69.4	60.1	34.7	23.2	54.8	5.0	6
Beau	74.3	61.2	36.6	22.8	33.6	3.5	3
Benhur	69.2	60.5	33.1	21.0	36.4	4.0	4
Caldwell	81.6	59.6	29.6	21.4	34.4	3.3	4
S. E.+	2.8	0.3	1.3	0.9	1.2	0.9	-

* Number of years in the mean. Yields and test weights were not included for 1978 because of severe winterkill of all varieties except Auburn.

** Scored 0 = erect to 9 -= lodged flat. Post-ripe straw was rated 3 weeks after maturity.

+ Standard error of the difference between variety means.

Table 2. Porter County winter wheat performance trials, three year average, 1978 - 1980*.

Variety	Yield**		Test Wt.	Lodging	Ht.	Winter-kill	Date headed
	bu/A		lb/bu	%	in	%	
Auburn	73.7	a	60.7	0	34	4	6-01
Titan	68.8	b	58.4	0	36	6	6-05
Roland	68.7	b	58.3	0	31	9	6-02
Arthur	67.3	bc	60.7	0	37	7	6-01
S76	67.0	bc	59.8	0	33	7	6-03
Abe	66.8	bc	60.5	0	35	9	6-01
Sullivan	66.2	bc	61.0	0	35	7	6-01
Beau	65.3	bc	61.3	0	35	9	6-02
Arthur 71	65.1	bc	60.7	0	36	6	6-02
Hart	63.7	bc	59.6	0	36	10	6-02
Monon	61.0	bc	60.3	0	39	9	5-31
Downy	60.6	c	59.9	0	35	10	6-02
Grand Mean	66.2		60.1	0	35	8	6-02

C.V. = 4.1%

* Data from performance trials of K. M. Day and reported in part in Purdue University Agric. Exp. Stn. Bull. 290 (1980).

** Means followed by the same letter or letters are not statistically different as determined by the Student-Newman-Keuls LSR test at the 0.10 level of probability.

Table 3. Tippecanoe County winter wheat performance trials, two-year average, 1979-1980*.

Variety	Yield**	Test Weight	Lodging	Height	Winterkill	Date headed
	bu/A	lb/bu	%	in	%	
S78	92.4 a	58.4	0	37	0	5-31
S76	91.3 ab	58.3	0	38	0	5-30
Roland	88.6 abc	58.3	0	36	0	5-30
Titan	88.1 abc	57.6	6	42	0	6-02
Auburn	87.3 abc	59.5	0	39	0	5-30
Hart	86.6 abc	58.4	8	42	0	5-28
Abe	85.1 abc	59.4	13	40	0	5-28
Downy	83.0 abc	59.1	20	42	0	5-29
Arthur 71	82.7 abc	59.7	21	42	0	5-28
Arthur	82.3 abc	59.4	11	43	0	5-27
Beau	81.7 abc	59.5	0	40	0	5-29
Sullivan	81.1 abc	59.5	15	41	0	5-27
Dancer	79.8 bc	59.4	43	45	0	5-28
Monon	77.3 c	59.0	36	44	0	5-26
Vigo	60.8 d	59.0	30	54	0	6-04
Grand Mean	83.2	59.0	14	42	0	5-29

C. V. = 3.7%

* Data from performance trials of O. W. Luetkemeier and reported in part in Purdue University Agric. Exp. St. Bull. 290 (1980).

** Means followed by the same letter or letters are not statistically different as determined by the Student-Newman-Keuls LSR test at the 0.10 level of probability.

Table 4. Randolph County winter wheat performance trials, two-year average, 1979 - 1980*.

Variety	Yield**	Test Weight	Lodging	Height	Winter-kill	Date headed
	bu/A	lb/bu	%	in	%	
Titan	82.6 a	58.3	1	41	2	5-31
Hart	79.8 ab	58.2	1	40	2	5-28
Roland	77.2 ab	58.4	0	35	2	5-30
Auburn	76.1 ab	59.4	1	39	2	5-30
Abe	74.4 ab	59.3	5	35	4	5-28
Arthur	74.1 ab	59.0	5	39	2	5-26
Sullivan	72.5 b	59.4	5	38	2	5-26
Downy	72.1 b	58.6	11	40	2	5-29
Beau	71.6 b	59.6	1	36	2	5-29
Arthur 71	70.1 b	59.4	4	38	3	5-27
Monon	69.8 b	58.6	22	41	2	5-28
Dancer	69.0 b	59.3	18	42	3	5-28
Grand Mean	74.0	59.0	6	39	2	5-28

C. V. = 5.1%

* Data from performance trials of K. M. Day and reported in part in Purdue University Agric. Exp. Stn. Bull. 290 (1980).

** Means followed by the same letter or letters are not statistically different as determined by the Student-Newman-Keuls LSR test at the 0.10 level of probability.

Table 5. Knox County winter wheat performance trials, three-year average, 1978 - 1980*.

Variety	Acre yield**	Test Weight	Lodging	Height	Winterkill
	bu.	lb/bu	%	in	%
Hart	79.4 a	57.8	1	41	2
S76	72.5 b	57.6	0	40	3
Arthur	71.9 b	59.3	14	42	2
S78	71.8 b	57.1	2	36	2
Titan	71.4 b	56.8	5	43	4
Auburn	70.8 b	58.7	0	40	2
Roland	69.8 b	56.7	1	37	2
Abe	69.4 b	58.9	2	39	5
Beau	69.1 b	59.7	0	39	4
Sullivan	68.0 b	59.4	16	41	3
Arthur 71	65.5 b	59.2	16	41	2
Monon	62.7 b	58.4	30	43	2
Grand Mean	70.2	58.3	7	40	3

C. V. = 6.1%

* Data from performance trials of K. M. Day and reported in part in Purdue University Agric. Exp. Stn. Bull. 290 (1980).

** Means followed by the same letter or letters are not statistically different as determined by the Student-Newman-Keuls LSR test at the 0.10 level of probability.

Table 6. Quality characteristics of wheat varieties as determined by the Soft Wheat Quality Laboratory, Wooster, OH, for the 1979 crop from Indiana drill plot over-state composite samples*.

Variety	Milling quality score	Baking quality score	Millability score	Cookie diameter	Cookie score	Cake volume	Cake score
				cm		cm^3	
Auburn	100.9 A†	96.0 B	116.1	18.0	6	1113	81
Arthur**	100.0 A	100.0 A	114.8	17.9	5	1097	87
Monon	103.5 A	84.1 E	119.4	17.6	4	1088	84
Abe	93.9 C	91.2 C	103.4	18.0	5	1078	86
Oasis	95.9 B	91.9 C	107.9	17.8	6	1114	88
Beau	91.1 C	89.4 C	101.0	17.8	5	1137	87
Sullivan	93.8 C	99.8 B	105.1	18.1	6	1121	88
Hart	100.8 A	80.8 E	116.7	17.4	3	1109	82
Roland	99.8 B	102.2 A	111.9	18.1	6	1134	89
Titan	109.3 A	95.9 B	128.0	17.8	6	1096	83

* Twenty pound sample size.

** Standard for comparisons

† Letters indicate levels of quality in relation to the standard variety. Letter A indicates a score as good as or better than the standard variety; letter B indicates a score measurably inferior to the standard for one character contributing to the milling or baking score; letter C, measurably inferior for two characters, etc.

Table 7. Comparative reactions to virus diseases of wheat varieties in nursery trials, 1976 - 1980.

8100164

Cultivar	Soil-borne mosaic (5)	Spindle steak mosaic (1979)	Barley yellow dwarf (1978)	(1979)
	(0-9)	(0-9)	(0-9)	(0-9)
Auburn	5.3**	4.5**	7+	5+
Arthur	4.0	6.5	6	4
Monon	2.9	2.5	6	3
Oasis	5.1	5.0	-	4
Beau	4.6	5.5	-	5
Redcoat	6.5	6.0	-	-
Caldwell	5.8	5.5	5	2
S. E. ‡	0.7			

* Number of years' data in mean.

** Reactions scored from 0 = immune to 9 = very susceptible.

+ Artificially infested with viruliferous aphids in the field in the fall at Lafayette, IN. Scored: 0 = no stunting to 9 = severe stunting.

‡ Standard error of the difference between variety means.

Table 8. Adult plant reaction to *Septoria tritici* in the field at Lafayette, IN. 8100164

	1978		1975		1976
	Severity*	Reaction type**	Severity	Reaction type**	Severity
	%		%		%
Auburn	37	A	60	B	9
Arthur	37	D	50	D	55
Monon	55	D	40	C	55
Oasis	55	A	5	A	26
Beau	55	C	5	B	26
Benhur	37	C	60	D	37
Caldwell	37	B	15	B	26

* Disease severity rated as percent of area of the upper four leaves necrotic.

** Reaction types: A = no pycnidia to D = abundant pycnidia in lesions.

Table 9. Reaction to powdery mildew in the adult plant stage in the field and for seedlings in the greenhouse*.

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	Infection in field**		Seedling reaction
	1979	1976	in 1978+
	%	%	0-4
Auburn	3	3	4
Arthur	40	7	3
Monon	80	25	4
Oasis	30	7	3
Beau	25	3	2+
Benhur	10	10	4
Caldwell	15	0-5	3+

* Naturally occurring races of the pathogen.

** Percent of leaf area affected.

+ Plant reactions: 2 = small colonies with sparse conidial chains lightly sporulating to 4 = large colonies with dense conidial chains and heavily sporulating.

Table 10. Leaf rust severity and reaction type at the adult plant stage in the field at Lafayette, IN*

	Percent infection and infection type**			
Variety	1979	1978	1976	1975
Auburn	0 R	5 R	0 R	20 R-MR
Arthur	10 S	5 MS	20 MS	2 MS
Monon	60 S	60 S	70 S	50 S
Oasis	2 S	10 MS	0 R	0 R
Beau	2 S	15 MS	7 MS	0 R-20 MS
Benhur	10 MS-MR	10 M	20 MS	0 R-50 MS
Caldwell	5 S/1 R	2 R/15 MS	0 R	0 R

* To races of Puccinia recondita occurring naturally at Lafayette, IN.

**Percent of flag leaf area (modified Cobb scale) covered by uredinia. Plant reactions: R = resistant fleck reaction; S = large sporulating uredinia; M = "moderately".

Table 11. Stem rust severity and reaction type at the adult plant stage in the field at Lafayette, IN.

Variety	Percent infection and infection type*	
	1979	1975
Auburn	2 MS	0 R
Arthur	1 MR	0 R
Monon	10 MS	5 S
Oasis	Tr MR	0 R
Beau	2 MS	0-1 R-S
Benhur	Tr R	0 R
Caldwell	1 R	0 R

* Percent of flag leaf sheath and peduncle area (modified Cobb scale) covered by uredinia. Plant reactions: R = resistant fleck reaction S = large sporulating uredinia; M = "moderately". Tests were performed with races 15 TMN, 15 TLM, 151 QFB, 151 QCB, and 17 HDL of Puccinia graminis f. sp. tritici

Table 12. Comparative winterhardiness and tolerance to aluminum of wheat varieties.

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Variety	Winter survival in 1978(%)*				Aluminum tolerance score+ (1 - 6)
	Nursery yield plots Lafayette, IN**	Field plots Tippecanoe Co.**	Porter Co.	Knox Co.	
Auburn	68	97	95	100	6
Arthur	48	67	85	100	5
Monon	50	47	75	100	3
Oasis	46	52	85	100	6
Beau	58	47	80	100	6
Caldwell	36	30	80	100	2
Hart	32	22	75	100	-

* Averages of four replications in the field.

** 1978 was a very severe test at Lafayette, IN for winterhardiness.

+ In liquid culture and scored 1 = excellent to 6 = poor.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
Livestock, Poultry, Grain & Seed Division
National Agricultural Library
Beltsville, Maryland 20705

November 10, 1981

PLANT VARIETY PROTECTION OFFICE

Gentlemen:

Subject: Application No. 8100164
Variety and Kind - 'Auburn' Wheat

As provided in section 83(a) of the Plant Variety Protection Act, 7 U.S.C. 2321, we request that the Certificate on the above variety be issued with a notation on each Certificate that the right to exclude others from selling, offering for sale, reproducing, importing or exporting the variety covered by this Certificate, or using it in producing a hybrid or different variety is waived.

It has been agreed that the certificate should be issued in the name(s) of:

Director, Purdue University Agricultural Experiment Station, and the Agricultural Research Service, U.S. Department of Agriculture

December 10, 1981
(Date)

B. R. Baumgardt
(Signature)

B. R. Baumgardt, Director
Purdue University Agricultural Experiment Sta.